CLAIMS

We claim:

1. A transmitter optical assembly comprising:

a transmitter substrate that includes a power line and a conductive path;

a laser source mounted on the transmitter substrate; and

a laser control mounted on the transmitter substrate, the laser control communicably connected with one or more of the laser source, the power line, and the conductive path, the laser control comprising a memory portion, the memory portion including one or more memory components for receiving or storing data.

2. The transmitter optical assembly as recited in claim 1, wherein the laser control further comprises a laser modulator, the laser modulator administering an alternating current from the laser control to the laser source; and a laser bias, the laser bias administering a direct current from the laser control to the laser source.

3. The transmitter optical assembly as recited in claim 1, wherein the transmitter substrate further comprises connections for one or more of a ground line, a diagnostic data line, and a diagnostic clock.

4. The transmitter optical assembly as recited in claim 1, wherein the conductive path is a transmission line that carries data from the host to the optical assembly, wherein the data are ultimately transmitted at the laser source.

5. The transmitter optical assembly as recited in claim 1, wherein the transmitter substrate comprises ceramic materials, and wherein circuit traces on the ceramic

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materials include three-dimensional metallic sputtering to shield electromagnetic interference.

6. The transmitter optical assembly as recited in claim 1, further comprising a monitor photodiode, the monitor photodiode communicably connected with the laser source and the laser control, the monitor photodiode providing the laser control with status information about the laser source.

7. The transmitter optical assembly as recited in claim 1, wherein the memory portion comprises one or more of an EEPROM, and a RAM.

8. The transmitter optical assembly as recited in claim 7, wherein at least one of the one or more memory components includes a portion that stores one or more of status and fault information, and operating temperature information.

9. The transmitter optical assembly as recited in claim 7, wherein at least one of the one or more memory components includes a portion for receiving diagnostic data.

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10. A receiver optical assembly comprising:

a receiver substrate that includes a power line and a conductive path;

a photodiode mounted on the receiver substrate;

an optical converter communicably connected with the photodiode, the optical converter for converting a received optical signal into an electrical signal; and

a processing control mounted on the receiver substrate, the processing control communicably connected with one or more of the photodiode, the power line, and the conductive path, the processing control comprising a memory portion, the memory portion comprising one or more memory components for receiving or storing data.

11. The receiver optical assembly as recited in claim 10, wherein the processing control further comprises a temperature sensor.

12. The receiver optical assembly as recited in claim 10, wherein the optical converter is an avalanche photo-diode, the receiver optical assembly further comprising a bias control mounted on the receiver substrate, the bias control communicatively connected with the optical converter, and the processing control.

13. The receiver optical assembly as recited in claim 10, wherein the conductive path is a data receiving line that carries data from the receiver optical assembly to the host.

14. The receiver optical assembly as recited in claim 10, wherein the receiver substrate comprises ceramic materials, and wherein circuit traces on the ceramic materials include three-dimensional metallic sputtering to shield electromagnetic interference.

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15. The receiver optical assembly as recited in claim 10, wherein at least one of the one or more memory components comprise one of an EEPROM, and a RAM.

16. The receiver optical assembly as recited in claim 15, wherein at least one of the one or more memory components includes a portion for receiving and storing diagnostic data.

17. The receiver optical assembly as recited in claim 16, wherein the receiver substrate further comprises connections for one or more of a ground line, a diagnostic data line, and a diagnostic clock.

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18. A combination optical assembly comprising:

a combination transmitter/receiver substrate that includes a power line and a conductive path;

a photodiode mounted on the combination substrate, the photodiode configured to receive an optical signal from a fiber optic network;

a laser source mounted on the combination substrate, the laser source configured to provide an optical signal to a fiber optic network;

a processing control mounted on the combination substrate, the processing control communicably connected with the laser source, the control comprising a memory portion, the memory portion including one or more memory components for receiving or storing data.

19. The combination optical assembly as recited in claim 18, further comprising an optical converter communicably connected with the photodiode, the optical converter for converting a received optical signal into an electrical signal.

20. The combination optical assembly as recited in claim 18, wherein the processing control is further communicably connected with the transimpedance amplifier, the power line, and the conductive path.

21. The combination optical assembly as recited in claim 18, wherein the processing control further comprises a postamp.

22. The combination optical assembly as recited in claim 18, wherein the processing control further comprises a laser modulator, the laser modulator administering an alternating current from the laser control to the laser source.

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23. The combination optical assembly as recited in claim 18, wherein the processing control further comprises a laser bias, the laser bias administering a direct current from the laser control to the laser source.

24. The combination optical assembly as recited in claim 18, wherein the optical converter is an avalanche photo-diode, the combination optical assembly further comprising a bias control mounted on the combination substrate, the bias control communicatively connected with the optical converter, and the processing control.

25. The combination optical assembly as recited in claim 18, wherein at least one of the one or more memory components comprises one of an EEPROM, and a RAM.

26. The combination optical assembly as recited in claim 25, wherein at least one of the one or more memory components is configured for receiving and storing diagnostic data.

27. The combination optical assembly as recited in claim 26, wherein the combination substrate further comprises connections for one or more of a ground line, a diagnostic data line, and a diagnostic clock.

28. The combination optical assembly as recited in claim 27, wherein the diagnostic data is communicated to the processing control from the host an I2C or MDIO circuitry.

29. The combination optical assembly as recited in claim 26, wherein the combination substrate comprises ceramic materials, and wherein circuit traces on the ceramic materials include three-dimensional metallic sputtering to shield electromagnetic interference.

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30. An optical transceiver comprising a fiber optic subassembly operably attached to the optical transceiver, the fiber optic subassembly comprising:

one of a transmitter, receiver, and combination transmitter/receiver substrate including a power line and a conductive path;

means operably disposed within the fiber optic subassembly for communicating high frequency optical data, wherein the means for communicating optical data includes one or more conventional optical transceiver components within the fiber optic subassembly, such that impedance that would otherwise be present in a high frequency electronic data communication is minimized.

31. The optical transceiver as recited in claim 30, wherein the means operably disposed within the fiber optic subassembly for communicating high frequency optical data comprises:

a photodiode mounted on the combination substrate, the photodiode configured to receive an optical signal from a fiber optic network;

a laser source mounted on the combination substrate, the laser source configured to provide an optical signal to a fiber optic network;

a processing control mounted on the combination substrate, the processing control communicably connected with the laser source, the control comprising a memory portion, the memory portion including one or more memory components for receiving or storing data.

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